

AMENDMENTS TO THE CLAIMS

The below listing of claims replaces all prior versions of claims in the application.

1. (Currently Amended) A water-lifting pump apparatus comprising:

a suction tank;

a discharge tank;

a pump for pumping water in said suction tank into said discharge tank, and

a discharge piping connected to a discharge side of ~~[[the]]~~said pump;

actuating means for driving said pump and controlling said actuating means being capable of varying a rotational speed of said pump;

a reverse flow preventing mechanism~~prevention device~~ for preventing a reverse flow of water pumped into said discharge tank toward said discharge piping;~~[[and]]~~

~~back flow rate control means for controlling a rotational speed of said pump while keeping the pump rotation in a normal direction such that reverse water flows in said pump within the limits of allowing vibrations of said pump based on a detected value of a pressure, a water level, or a flow rate of water in said discharge piping falling from said suction piping into said suction tank when pumping operation is finished, thereby to lower the water level gradually in said discharge piping~~

a detector for detecting a pressure or a flow rate of water in said discharge piping or a water level difference between a water level in said discharge tank or said discharge piping and a water level in said suction tank; and

a control device for controlling said actuating means to control the rotational speed of said pump.

wherein after an end of water pumping operation, said control device controls said pump to maintain rotation at a reduced rotational speed, said reduced rotational speed being based on a detected value of said detector and to allow for water in said discharge piping to fall into said suction tank through said pump.

2. (Currently Amended) A water-lifting pump apparatus according to claim 1, wherein said reverse flow ~~preventing mechanism~~prevention device comprises an overflow mechanism having a dam disposed in said discharge tank.

3. (Currently Amended) A water-lifting pump apparatus according to claim 1, wherein said reverse flow ~~preventing mechanism~~prevention device comprises a reverse flow prevention valve disposed on a distal end of said discharge piping.

4. (Currently Amended) A water-lifting pump apparatus according to claim 1, wherein said reverse flow ~~preventing mechanism~~prevention device comprises a siphonic pipe disposed in said discharge piping.

5. – 7. (Cancelled)

8. (Currently Amended) A water-lifting pump apparatus comprising:

- a suction tank;
- a discharge tank;
- a pump for pumping water in said suction tank into said discharge tank, ~~and a discharge~~
~~pipng connected to a discharge side of the pump,~~ said pump having a movable vane mechanism
for adjusting the vane angle an angle of a vane of an impeller;
- a discharge piping connected to a discharge side of said pump;
- actuating means for driving said pump, said actuating means being capable of varying a
rotational speed of said pump;
- a reverse flow ~~preventing mechanism~~ prevention device for preventing a reverse flow of
water pumped into said discharge tank toward said discharge piping; and
- ~~back flow rate control means for adjusting the vane angle of said impeller of said pump~~
~~such that reverse water flows in said pump within the limits of allowing vibrations of said pump~~
~~based on a detected value of a pressure, a water level, or a flow rate of water in said discharge~~
~~piping falling from said suction piping into said suction tank when pumping operation is~~
~~finished, thereby to lower the water level gradually in said discharge piping~~
- a detector for detecting a pressure or a flow rate of water in said discharge piping or a
water level difference between a water level in said discharge tank or said discharge piping and a
water level in said suction tank; and
- a control device for controlling said actuating means to control the rotational speed of
said pump and said moveable vane mechanism,

wherein after an end of a water pump operation, said control device controls said pump to maintain rotation and adjust the angle of said vane based on a detected value of said detector to allow for water in said discharge piping to fall into said suction tank through said pump.

9. (Previously Presented) A water-lifting pump apparatus according to claim 1, further comprising:

a reversal prevention device for preventing said actuating means from being reversed.

10. (Withdrawn) A method of controlling operation of a water-lifting pump apparatus for pumping water in a suction tank into a discharge tank with a pump and a discharge piping connected to a discharge side of the pump, comprising:

after the pumping operation is finished, detecting a pressure, a water level, or a flow rate of water in said discharge piping falling from said discharge piping into said suction tank; and

controlling a rotational speed of said pump while keeping the pump rotation in a normal direction such that reverse water flows in said pump within the limits of allowing vibrations of said pump based on said detected value, thereby to lower the water level gradually in said discharge piping.

11. – 14. (Cancelled)